REMARKS/ARGUMENTS

Favorable reconsideration of this application in light of the following discussion is respectfully requested.

Claims 1-35 are presently active.

In the outstanding Office Action, Claims 1, 6-8, 11, 14, 19-21, 26-28, and 30 were rejected under 35 U.S.C. § 103(a) as being unpatentable over Tse (U.S. Pat. No. 6,198,845) in view of Koga et al (U.S. Pat. No. 5,388,167). Claims 2-3 and 15-16 were rejected under 35 U.S.C. § 103(a) as being unpatentable over Tse and Koga et al in view of Shirasawa (U.S. Pat. No. 5,689,590). Claims 4-5, 9-10, 17-18, 22-23, and 29 were rejected under 35 U.S.C. § 103(a) as being unpatentable over Tse and Koga et al in view of Kamo (U.S. Pat. No. 5,465,160). Claims 12-13 and 24-25 were rejected under 35 U.S.C. § 103(a) as being unpatentable over Tse and Koga et al in view of Mortimore (U.S. Pat. No. 5,740,428).

Claim 1, as previously presented, defines a photoelectric conversion unit which scans a document and supplies image data of the scanned document, a background detecting unit which detects a background level of the image data so as to produce original background level value data that is separate from and not part of the image data and indicative of the background level, an image processing unit which applies one or more types of image processing to the image data, and applies image processing identical to the one or more types of image processing to the original background level value to produce modified background level value data, and a background removal unit which removes background noise from the image processed data according to a generated threshold that is derived from the modified background level value data.

Thus, the claimed invention determines ***original background level value data*** that is separate from and not part of the image data and indicative of the background level, ***applies***

image processing to the background level data ***to produce a modified background level data***, and removes background noise based on ***a threshold derived from the modified background level value data***. Hence, the present invention utilizes a threshold derived from modified background level data (i.e., derived from background data separate from the original image data and that has been subject to the same image processing as the image data).

The Office Action asserts that Tse produces such modified background level value data at col. 5, lines 26-34. Yet, the section of Tse relied on in the Office Action discloses generating and compressing a histogram of the distribution of various gray levels within a scanned image. An average background grey-level is determined based on for example the distribution of grey levels in the mid range of the histogram. See equation 10 of Tse. This histogram data represents data taken on the original image in order to determine an appropriate "gray-level white value." Tse does not disclose or suggest identifying a background value and image processing the background value to produce a modified background level upon which a threshold for background noise is determined. To the contrary, it is the averaged background level value that is used in Tse to image process the original image data.

Moreover, the Office Action acknowledges on page 4, that Tse does not disclose that the original background data is separate from and not a part of the image data. The Office Action then applies Koga et al for an asserted teaching of "removing original background data (figure 2D of Koga) that is separate from and not part of the image data (figure 2C and column 10, lines 30-46 of Koga)."

This section of Koga et al recites:

> The digital file document image 202 is forwarded to a shading removal processor 802, corresponding to the shading removal processor 110 of FIG. 1, which converts the image 202 into a digital deshaded image 203. The deshaded image 203 is forwarded from the shading removal processor 202 to a deshaded image transmission section 803, which transmits the deshaded image, preferably in compression encoded form, over a transmission line, for example a telephone line or special data line. The document input section 801 also forwards the document image 202 to a shaded region extractor 804, which

> converts the image 202 into a digital shaded region image, in which regions such as those shown in FIG. 2D where there is shading in the input image 202 are assigned a value of one and all other regions are assigned a value of zero, which greatly increases the efficiency of compression encoding. [emphasis added]

Koga et al earlier disclosed at col. 4, lines 29-46, with regard to the shading removal processor 110 that:

> Also, the file document image from the file document image input section 102 is forwarded to the shading removal processor 110, which outputs a de-shaded image 203 that is shown in FIG. 2C consisting of the file document image 202 with the shading removed. The shading removal processor 110 may be of a conventional type. In the shading removal process 110 the format features discriminated by the document format discriminator 108 from among the various format features stored in the document format feature memory 106 are used to obtain from the template image memory 107 the template image 201 that is useful in removing the shading from the file document image 202 to obtain the deshaded image 203. The removal of the shading by the shading removal processor 110 is effectively carried out with reference to the density of the number of lines of the shading of the retrieved template image, which was retrieved from the template image memory 107.

Thus, as seen from this disclosure of Koga et al, the document produced from the original image is a "deshaded" image. Koga et al further disclose that this "deshaded" image is used as part of the image processing to generate a reshaded image region image 204. Thus, the deshading and reshading in Koga et al represent image data processing on the original image data.

While Applicant makes no comment as to whether or not the deshading in Koga et al constitute a background level or not, there exists no disclosure in Koga et al that the pixel values in the corresponding shaded regions undergo the same image processing as the original image data to produce modified background level value data. Similar to that in Tse, Applicants respectfully submit that the shading values in Koga et al are used to process the original image data, and the original shading values are not themselves image processed to produce a modified shading level upon which a threshold for background noise removal is determined.

Accordingly, Applicant submits that, Claims 1, 12, 14, 24, 26, 27, and 30 (and the claims dependent therefrom) patentably define over Tse and Koga et al.

Consequently, in light of the above discussions, the outstanding grounds for rejection are believed to have been overcome. The application as amended herewith is believed to be in condition for formal allowance. An early and favorable action to that effect is respectfully requested.

Respectfully submitted,

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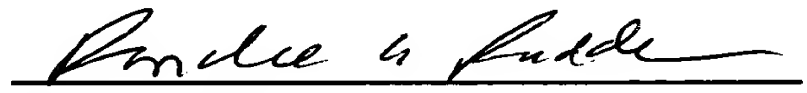

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